

Notice of Allowability

Application No.

10/032,145

Examiner

Eric F Winakur

Applicant(s)

PAWLUCZYK, ROMUALD

Art Unit

3736

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 18 January 2005.
2. ☒ The allowed claim(s) is/are 1, 2 and 4-29.
3. ☒ The drawings filed on 21 December 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 7/28/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Marc Richards on 28 April 2005. Applicant's remarks filed 18 January 2005 discuss Figure 3 of the Yang et al. reference, while examiner based his rejection on the Figure 5 embodiment. Examiner noted that the optical fiber of Yang et al. falls within Applicant's claimed "radiation expanding element", but that Yang et al. position the optical fiber and sample at focus points to provide equal power densities at both points, while Applicant discloses that their radiation expanding element is configured to provide a lower power density beam to the sample (specification, page 18, beginning on line 11). Applicant agreed to amend claims 1 and 24 to more clearly distinguish this point. In reviewing claim 29, Examiner noted that WO 97/23159 (previously cited by Applicant) was relevant to the claim as filed with the amendment. Applicant agreed to recite "an element for scattering an electromagnetic radiation beam" to avoid a rejection based upon this reference.

Examiner notes that while the references listed on the IDS filed 28 July 2003 had been considered when preparing the previous Office action, the associated PTO-1449 had not been initialed and signed. An initialed and signed copy is included with this action.

The application has been amended as follows:

Claim 1 was amended as follows:

1. An apparatus for measurement of Raman scattered radiation comprising:
 - a) one or more than one source of electromagnetic radiation for producing an electromagnetic radiation beam characterized by a narrow spectral width;
 - b) an integrating cavity comprising:
 - (i) an interior and an exterior, said interior for receiving a sample, said integrating cavity having one or more than one port for insertion of said sample in said interior and for transmission of electromagnetic radiation into and out from said interior, said one or more than one port extending from said exterior to said interior of said integrating cavity, and
 - (ii) a radiation expanding element for expanding said electromagnetic radiation beam to provide said sample with radiation having a power density lower than that of said electromagnetic radiation beam ~~before said electromagnetic radiation beam comes into contact with said sample;~~
 - c) a first optical element for transmitting said electromagnetic radiation beam into said interior of said integrating cavity through said one or more than one port;
 - d) a second optical element for collecting Raman scattered electromagnetic radiation from said sample through said one or more than one port;

- e) a spectrum analyzer for determining a spectral composition of said Raman scattered electromagnetic radiation;
- f) a detector for measuring said Raman scattered electromagnetic radiation; and
- g) a system for determining a concentration of one or more than one chemical compound in said sample from Raman scattered electromagnetic radiation measured by said detector.

Claim 17 was amended as follows:

17. The apparatus according to claim 16, wherein said diffusion wall comprises one or more than one aperture, said one or more than one aperture located outside a cross sectional area of said electromagnetic radiation beam impinging on said diffusion wall.

Claim 24 was amended as follows:

24. A method for measuring a concentration of one or more than one chemical compound in a sample using Raman scattering comprising:

- a) placing said sample within an integrating cavity comprising:
 - i) an interior and an exterior, wherein a said sample is placed in said interior of said integrating cavity, said integrating cavity having one or more than one port for insertion of said sample in said interior and for transmission of electromagnetic radiation into and out from said integrating cavity, said one or more than one port extending

from said exterior to said interior of said integrating cavity, and

- ii) a radiation expanding element for expanding said ~~an~~ electromagnetic radiation beam to provide said sample with radiation having a power density lower than that of said electromagnetic radiation beam before ~~said electromagnetic radiation beam comes into contact with said sample;~~
- b) generating an ~~an~~ said electromagnetic radiation beam, said electromagnetic radiation beam characterized by a narrow spectral width and transmitting said electromagnetic radiation beam into said integrating cavity;
- c) directing said electromagnetic radiation beam through said integrating cavity so that before said electromagnetic radiation is produced and beam comes into contact with said sample ~~to produce an expanded beam~~ , said radiation having a ~~specific~~ radiation power density ~~smaller~~ less than a predetermined tolerance limit for said sample ~~is produced;~~
- d) collecting Raman scattered electromagnetic radiation from said sample within said integrating cavity;
- e) spectrally decomposing said Raman scattered electromagnetic radiation;
- f) measuring said Raman scattered electromagnetic radiation; and
- g) determining said concentration of said one or more than one chemical compound.

Claim 28 was amended as follows:

28. The method according to claim 24, wherein said radiation expanding element of said integrating cavity comprises one or more than one diffusing wall separating said interior of said integrating cavity into a diffusion chamber and a sample chamber, said diffusion chamber and said sample chamber each comprising one or more than one port extending from said exterior to said interior and wherein in step b) said sample is placed in said sample chamber, in step c) said electromagnetic radiation beam is transmitted into said diffusing chamber through said one or more than one port of said diffusing chamber and in step d) said Raman scattered electromagnetic radiation is collected from said sample through said one or more than one port of said sample chamber.

Claim 29 was amended as follows:

29. An integrating cavity comprising:

a) an interior and an exterior, ~~wherein a sample is placed in~~ said interior for receiving a sample ~~of said integrating cavity~~, said integrating cavity having one or more than one port for insertion of said sample in said interior and for transmission of electromagnetic radiation into and out of said integrating cavity, said one or more than one port extending from said exterior to said interior of said integrating cavity, and

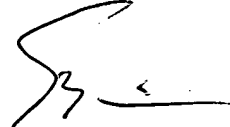
b) ~~a radiation expanding~~ an element for ~~expanding said~~ scattering an electromagnetic radiation beam to provide said sample with an expanded

radiation beam having a reduced power density lower than that of said electromagnetic radiation beam ~~before said electromagnetic radiation beam comes into contact with said sample.~~

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric F Winakur whose telephone number is 571/272-4736. The examiner can normally be reached on M-Th, 7:30-5; alternate Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571/272-4726. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Eric F Winakur
Primary Examiner
Art Unit 3736

29 April 2005